CLAIMS

1. A communications system supporting communication of data and comprising a number of core networks with a plurality of core network functional server nodes (core nodes)(SGSN;MSC...) and a number of radio access networks, each with a number of radio access network control nodes (RNC, BSC), wherein at least some of the core nodes are arranged in a pool to, in common, control at least a number of control nodes supporting pooling of core nodes, characterized in
that for a transition of a connection of a mobile station (MS) from a first control node not supporting pooling of core nodes but served by a first core node belonging to a pool, to a second control node supporting pooling of core nodes, means are provided for enabling the mobile station to remain connected to said first core node forming part of the pool.

2. A communication system according to claim 1, characterized in
said means generates/allocates for a mobile station connecting to a first core node, a temporary mobile station identity (temporary MS id) ((P)-TMSI), said temporary mobile station identity including a pool identification (NRI) for uniquely identifying the core node in the pool to which the core node belongs, that said pool identification is included in a modified mobile station routing/location area update message, and in that when the mobile station moves from the coverage of the first control node to the coverage of the second control node, said modified routing/ location area update message including the pool identification is relayed to said first core node from said second control node.

3. A communication system according to claim 2,
c h a r a c t e r i z e d i n
that said transition provides an intra core node intersystem change.

4. A communication system according to any one of claims 1-3,
c h a r a c t e r i z e d i n
that at least one of the core nodes of the pool comprises a dual-/multimode core node supporting access over more than one radio access network, said radio access networks implementing different radio access techniques.

5. A communication system according to any one of claims 1-4,
c h a r a c t e r i z e d i n
that said first and second control nodes belong to the same radio access network, a first part of which not supporting pooling and containing said first control node and a second part of which supporting pooling and containing said second control node.

6. A communication system according to any one of the preceding claims,
c h a r a c t e r i z e d i n
that the core nodes comprise Serving GPRS Support Nodes (SGSNs) and in that the control nodes comprise Base Station Controllers (BSCs) for GSM communication and/or Radio Network Controllers (RNCs) for UMTS communication using WCDMA radio access technology.

7. A communication system according to any one of the preceding claims,
c h a r a c t e r i z e d i n
that at least some core nodes comprise Mobile Switching Centers (MSC) for circuit switched communication and in that at least some of the control nodes are Base Station Controllers (BSCs).

8. A system according to any one of the preceding claims, characterized in that said first and second control nodes belong to the same radio access network comprising a radio access network (RAN) for e.g. UMTS or GMS and in that a part of said UMTS RAN or GSM RAN does not support pooling of core nodes.

9. A system according to claim 4 and any one of claims 1-3,6, characterized in that the first and second control nodes support different radio access technologies, and in that the first node comprises a dual mode access node.

10. A system according to claim 9, characterized in that the first control node is an UMTS RNC not supporting pooling of core nodes, and in that the second control node is a GSM BSC support pooling of core nodes.

11. A system according to claim 9, characterized in that the first control node is a GSM BSC not supporting pooling of core nodes, and in that the second control node is a UMTS RNC node supporting pooling of core nodes.

12. A system according to any one of claims 1-11, characterized in that the first core node of a pool allocates a temporary mobile station identity ((P)-TMSI) with pool identification (NRI) to a connecting/attaching mobile station irrespectively of whether the mobile station connects to a control node supporting pooling of

core nodes or to a control node not supporting pooling of core nodes.

13. A system according to claim 12,
characterized in
that the temporary mobile station comprises a (P)-TMSI modified in that it is extended with a pool identification comprising e.g. NRI (Network Resource id).

14. A system according to claim 13,
characterized in
that said pool identification (NRI) is included in mobile station (MS) Routing/Location Area Update messages provided to the second control node.

15. A system according to claim 13 or 14,
characterized in
that the first core node uses the Gb-flex/Iu-flex mechanism for allocating a temporary mobile station identity comprising pool unique identity irrespectively of either of the radio access networks (parts of networks) is not Iu-flex/Gb-flex enabled.

16. A core network functional server node used in (a) communication system(s) supporting communication of data for mobility (and session management), and forming part of a pool of core network functional server nodes, in common able to serve at least one, or part of a, radio access network to which a mobile station may connect over a radio access network control node,
characterized in
that the core node comprises means for, at a transition of a connection/attachment of a mobile station (MS) from a first control node not supporting pooling of core nodes to another,

second, control node supporting pooling of core nodes, keeping the mobile station connected to said first core node.

17. A core node according to claim 16,
c h a r a c t e r i z e d i n
that said means comprises means for generating and allocating a temporary mobile station identity further comprising a pool identification for uniquely identifying the core node in the pool to which the said core node belongs.

18. A core node according to claim 17,
c h a r a c t e r i z e d i n
that the temporary mobile station identity is generated and allocated upon entering the area served by any core node forming part of the pool irrespectively of whether the mobile station is connected to a control node supporting pooling of core nodes or not.

19. A core node according to claim 18,
c h a r a c t e r i z e d i n
that said temporary mobile station identity is included in a routing/location area update message received/relayed from a second control node to the first core node enabling keeping the mobile station connected to the (first) core node.

20. A core node according to claim 19,
c h a r a c t e r i z e d i n
that a mobile station transition from a first to a second control node comprises an intra core-intersystem change.

21. A core node according to any one of claims 16-20,
c h a r a c t e r i z e d i n

that the (first) core node comprises a dual/multi mode core node supporting access over at least two radio access network implementing different radio access technologies.

22. A core node according to any one of claims 16-21, characterized in that it comprises a Serving GPRS Support Node (SGSN).

23. A core node according to any one of claims 16-21, characterized in that it comprises a Mobile Switching Center (MSC).

24. A core node according to claim 21, characterized in that it uses the Gb-flex mechanism or the Iu-flex mechanism for allocating a modified temporary mobile identity including a pool identification to a mobile station and in that the transition comprises an intra SGSN intersystem change.

25. A method for handling connection of a mobile station moving in a communication system supporting communication of data, and comprising a number of core networks with a plurality of core network functional server nodes (core nodes) and a number of radio access networks, each with a number of radio access network control nodes, at least some of the core nodes being arranged in a pool to, in common, control at least a number of radio access network control nodes supporting pooling of core nodes, characterized in that it comprises the step of: for a mobile station moving from a first routing area in which it is connected to a radio access network control node not supporting pooling of core nodes, but served by a first core node forming part of the pool, to a second

routing/location area controlled by a radio access network control node supporting pooling of core nodes,

- keeping the mobile station connected to said first core node at least until the mobile station again enters a routing/location area controlled by a radio network control node not supporting pooling of core nodes.

26. A method according to claim 25,
characterized in
that it comprises the steps of:

- allocating a temporary mobile station identity provided with a pool identification, to a mobile station connecting to first a radio network access control node, served by a core node of the pool, irrespectively of whether the first radio access network control node supports pooling of core nodes or not;
- including the pool identification in the message relating to change/updating of routing/location area when the mobile station moves to a routing/location area covered by a second radio access network control node supporting pooling of core nodes;
- relaying the routing/location area change/updating message to the first core node from the second radio access network control node.

27. A method according to claim 26,
characterized in
that said first and second radio access network control nodes belong to the same radio access network and implement the same radio access technology.

28. A method according to claim 25 or 26,
characterized in

that the first core node comprises a dual/multimode access node supporting at least two radio access technologies.

29. A method according to claim 28,
c h a r a c t e r i z e d i n
that the first control node is an UMTS RNC and that the second control node is a GSM BSC or vice versa.

30. A method according to any one of claims 25-29,
c h a r a c t e r i z e d i n
that the first and second core nodes are SGSN:s.

31. A method according to any one of claims 25-28,
c h a r a c t e r i z e d i n
that said first and second core node respectively comprises a mobile switching center (MSC).